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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/762,691 | 01/22/2004 | Naoki Komai | 09792909-5775 | 5255 |

26263 7590 09/16/2008

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| EXAMINER | |
|---|---|
| SMITH, NICHOLAS A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1795 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 09/16/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/762,691 | KOMAI ET AL. | |
| | Examiner | Art Unit | |
| | NICHOLAS A. SMITH | 1795 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-3* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 May 2008 has been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Easter et al. (US 6368190 B1) in view of Talieh (US Patent 6,176,992).

4. Easter et al. discloses (Figs. 1, 3 or 5, col. 3, line 46 to col. 5, line 8) an apparatus comprising: a rotatable polishing surface plate (**64,** Figure 3) including an electrode (**76,** Figure 3); a porous polishing pad (**72**) disposed on a polishing surface plate capable of conductivity; a substrate holding unit (**30**) with a work surface (bottom of wafer) of a work substrate (**38**) and rotatably disposed and opposed to a polishing surface of a polishing pad (**72**); an another electrode (**50** connected to **38,** col. 4, lines 32-51) in contact with a work surface in a region; a chemical supply unit (**46**) capable of

delivering a chemical liquid onto a polishing pad (**72**); and a power source capable of delivering the claimed polarity (**50**, Figure 3). Furthermore, Easter et al. discloses a chemical supply unit (**46**) that is capable of supplying a chemical liquid onto a substantially central portion of the pad and thus impregnating the polishing pad with said chemical liquid. Due to Easter al.'s rotation (**68**) of the pad, centripetal forces would move the chemical liquid in an outer circumferential direction of said rotating polishing.

5. However, Easter et al. does not explicitly disclose wherein the substrate holding unit is in a position that is an outer circumferential portion of said work surface disposed outside of said polishing surface of said polishing pad.

6. Talieh discloses an electrochemical mechanical processing system with a polishing pad and a substrate holding unit in a position that is an outer circumferential portion of said work surface disposed outside of said polishing surface of said polishing pad (Figure 1B). It would have been obvious to one of ordinary skill in the art to substitute Talieh's substrate holding unit's position for Easter et al.'s substrate holding unit position because such a simple substitution would yield a predictable result of polishing a substrate surface. See MPEP 2141 III (B).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Easter et al. in view of Talieh as applied to claim 1 above, and further in view of Duboust et al. (US 2003/0116446), Chang et al. (US 6,206,760), and Kondo et al. (US 2002/0061722).

8. Easter et al. discloses a chemical supply unit (Fig. 3, **46**).

9. Easter et al. in view of Talieh does not explicitly disclose at least one unit for supplying said electropolishing liquid in a controlled flow rate by said chemical liquid control unit as claimed.

10. Duboust et al. pertains to electrochemical mechanical polishing (ECMP) (paragraph [0011]) and is in the same field of endeavor as Easter et al. Duboust et al. teaches a method and a unit for controlling electrolyte composition as claimed (paragraphs [0028]-[0036]). It would have been obvious to one of ordinary skill in the art to modify Easter et al.'s ECMP apparatus with Duboust et al.'s means for controlling electrolyte composition in order to regulate a continuous system and to avoid interference with other system additives (Duboust et al., paragraph [0008]).

11. Easter et al. modified byTalieh and Duboust et al. teach a means for supplying electropolishing liquid in a controlled flow rate by said chemical control liquid unit.

12. However, Easter et al. modified by Talieh and Duboust et al. do not explicitly teach a means for delivering individually controlled flow rates of pure water as claimed.

13. Chang et al. pertains to chemical mechanical polishing (CMP), which is in the same field of endeavor with those concerned with planarizing or polishing semiconductor surfaces (Chang et al., abstract; Duboust et al., abstract; Talieh, col. 5, lines 16-31; Easter et al., abstract). Chang et al. teaches means for individually controlled cleaning solution of DI water (col. 6, lines 13-57). It would have been obvious to one of ordinary skill in the art to modify the planarizing apparatus of Easter et al. as modified by Talieh and Duboust et al. with Chang et al.'s means for individually

controlling cleaning solution in order to remove foreign substances from the CMP apparatus and reduce contamination (Chang et al., col. 6, lines 48-57).

14. Easter et al. modified by Talieh, Duboust et al., and Chang et al. teach a means for supplying individually controlled electropolishing liquid and pure water.

15. However, Easter et al. modified by Talieh, Duboust et al. and Chang et al. do not specifically teach a means for delivering individually controlled flow rates of free abrasive grains as interpreted by means-plus-function language supported in the specification at page 21, line 8 to line 15.

16. Kondo et al. pertains to chemical mechanical polishing (CMP), which is in the same field of endeavor with those concerned with planarizing or polishing semiconductor surfaces (Easter et al., abstract; Chang et al., abstract; Duboust et al., abstract; Talieh, col. 5, lines 16-31; Kondo et al., paragraph [0002]). Kondo et al. teaches means for individually controlled free abrasive grains (paragraphs [0053]-[0056], Figure 1). It would have been obvious to one of ordinary skill in the art to modify the planarizing apparatus of Easter et al. as modified by Talieh, Duboust et al. and Chang with Kondo et al.'s means for individually controlled free abrasive grains in order to produce an accurate polishing rate (Kondo et al., paragraph [0002]).

17. Therefore, Easter et al. modified by Talieh et al., Duboust et al., Chang et al. and Kondo et al. teaches a system that is capable of individually controlling the quantities of electropolishing liquid, free abrasive grains, and pure water supplied.

18. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Easter et al. in view of Talieh as applied to claim 1 above, and further in view of Duboust et al.

19. Easter et al. in view of Talieh does not explicitly disclose a cup for receiving a chemical liquid discharged from the top of said polishing pad, said cup provided around side periphery of said polishing surface plate and on the bottom side of the said polishing surface plate or a chemical liquid discharge unit provided in said cup at a position lower than said polishing surface plate.

20. Duboust et al. teaches a cup (**202**, Figure 1) for receiving and extracting a chemical liquid discharged from the top of said polishing pad, said cup (**202**, Figure 1) provided around side periphery of said polishing surface plate and on the bottom side of the said polishing surface plate or a chemical liquid discharge unit (**214**, Figure 1) provided in said cup at a position lower than said polishing surface plate. It would have been obvious to one of ordinary skill in the art to modify Easter et al. in view of Talieh's ECMP apparatus with Duboust et al.'s cup and chemical liquid discharge unit in order recycle and recondition the used polishing solution (Duboust et al., paragraph [0028]).

## *Response to Arguments*

21. Applicant's amendment to claim 1 has been considered; new ground(s) of rejection of Easter et al. are applied as stated above.

## *Conclusion*

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS A. SMITH whose telephone number is (571)272-8760. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

23. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on (571)-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NAS
/SUSY N TSANG-FOSTER/
Supervisory Patent Examiner, Art Unit 1795